

# AVIATION WEEK

A MCGRAW-HILL PUBLICATION

MARCH 14, 1949



L-M—Bartows on Salt Lake City's 6,830' N/S instrument runway, seen from the control tower. These are the latest controllable type providing 180,000 glare-free beam candlepower.

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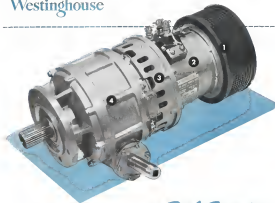
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(cont.)



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AVIATION WEEK, March 24, 1969

## NEWS SIDELIGHTS

### Tax Cut

Chances for having the 15 percent transportation tax slashed to its present level of 5 percent appear small.

House Republicans have unanimously endorsed this, and there is substantial support for it among Southern Democrats. A splitting of administration Democrats also favors the move, yielding Rep. John Kennedy (D., Mass.) who has introduced a bill to repeal the wartime imposed levy.

### Route Plan

Although theoretically ideal, the Hoover Commission's proposal that the Secretary of Commerce may act as an overall transportation mode system is not given much weight as a practical proposition (the route structure which largely "just grew", is already set).

Very little change is already out of the question. The Secretary's plan could only influence comparatively minor route additions and changes.

Under the Hoover Commission plan, the Secretary would present his case to the Civil Aeronautics Board, Interstate Commerce Commission, and the Maritime Commission, opposing or favoring route developments according to whether or not they conform to his overall plan. The Secretary would also be empowered to initiate actions before the regulatory agencies.

### Stiff Competition

Bankruptcy proceedings involving Peruvian International Airways, Inc. printed up the financial difficulties of other Latin American flag lines attempting to lock increasingly fierce U.S. competition.

Officials of the foreign carrier are finding their governments have become reluctant to pour more money into "prejudicial" routes. They talk mostly of the "huge subsidies" provided by the U.S. to Pan American Airways, Braniff, TWA, Frontier, Chicago & Southern and National.

The government-owned Venezuelan carrier Lines Aeropostal Venezolanas (LAV), which operates Comandante Frei Correo to Havana and New York, recently announced a through departmental reorganization as an attempt to reduce heavy losses.

Newly nationalized Peruvian International Airways in Peru has said the Peruvian government would instead financial aid,

### Hoover On Air

Hoover Commission's recommendation that National Advisory Committee for Aeronautics be placed in the Commerce Department is not expected to get far.

The military, as well as NACA itself and private industry circles, are expected to oppose it. Under the Hoover Commission plan, Commerce Department would be composed of two divisions—a transportation section and an industrial and commercial review.

All non-regulatory government transportation activities would be lumped into the transportation section, including all of the activities of the Civil Aeronautics Administration, safety enforcement functions of the Civil Aeronautics Board, and the NACA.

Dismissing from the Commission's recommendation, member James Pollock, president of the University of Michigan, commented NACA "has lost many years of successful operation as an independent agency... (its) organization problems... have not been sufficiently explored... to justify any drastic recommendation... as to its location in the structure of government." At least ten executive agencies are concerned with the research conducted...

but the support was not forthcoming by early this month, when the same closed its New York offices after repudiating service U.S., Canadian and Panamanian stockholders have nearly equal interests in TIA.

### 10,000 Miles

U.S. Air Force does not plan to send its B-36 bombers on a round-the-world mission using aerial refueling.

The B-36s could do about 16,000 miles nonstop using bomb bay tanks and without refueling. However, significant military range of the ultrastrategic bomber is 10,000 miles and USAF is not interested in any greater ranges. B-36 can do its military job without refueling.

Most part of the B-36 refueling operations, noted by many newspapers

enthusiasts, was to prove the efficiency of pre-arranged refueling schedules, would make communications network and, incidentally, Strategic Air Command's already existing B-36 on its military job over a 10,000 mile range with only one refueling.

### Airlift Scoreboard

Berlin airlift passed the million ton mark last month with a total of 1,014,516 tons delivered by U.S. and British planes during the first eight months of operations.

British planes have delivered 251,388 tons with the balance of 763,128 tons carried by USAF and Navy planes. Record daily tonnage was achieved on Feb. 22 and 23 with 7715 and 7658 tons respectively. Total U.S. airlift cargo has now risen to \$15,702,600 including a \$10 million more. Total of 23 aircraft including 14 C-54s and 6 C-47s have been lost.

### PRO Shifts

U.S. Air Force Public Relations Director Steve Lee has indicated his top level assistants in what amounts to a three way reshuffle.

In briefings, Gen. A. Robert Genshew left the military deputy job vacated by the retirement of Brig. Gen. George Schulz, takes Col. Ed. Niziolli from his job as director of air administration to become deputy assistant to Lee, and moves Col. Sam South from executive to Gen. Vandenberg to Niziolli's former post as director of air information.

### More Transports

U.S. Air Force fiscal 1970 procurement program has a big slice of transports but none of them will meet the requirements set by Berlin airlift director, Maj. Gen. William Tunner for an efficient military cargo plane.

USAF will buy C-124s for light assault transports, Fairchild C-119s for medium troop carrier operations and Douglas C-124s to be utilized in heavy troop carrier operations.

Also in the fiscal 1970 picture are more military versions of Lockheed's Constellation. General is also scheduled to sell USAF new Constellation as the T-23 advanced two-engine tanker.





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## NEWS DIGEST

### DOMESTIC

Eight airlines which had proposed a \$1 surcharge on all tickets, dropped plans when other truck lines would not join. Airlines which had agreed to the fare increase, to be effective Mar. 15: American, Eastern, TWA, United and National, with Midcontinent, Delta, and Braniff proposing the surcharge on routes competitive with the other five. North American Flight jet fighters, holder of the world's absolute speed record, was named "Silver" by U. S. Air Force.

New passenger lift record was set by Convair 440, between New York and West after it flew 222 percent faster San Diego to San Francisco (ANALOGUE WEEK, Mar. 7), plane flew the same 508 mi. route with 269 aboard. Dr. Philip M. Morse was named in records division and deputy director of the Weapons Systems Evaluation Group by Defense Secretary Foran. The group is the top level organization that studies tested methods. Morse, professor at Georgia Tech, is director of the Institute of Technology, formerly was director of the Atomic Energy Commission's Brookhaven Laboratory.

### FINANCIAL

Wright Aircraft Corp. declared a first-quarter dividend of \$1.25 a share on all capital stock outstanding, payable Mar. 28 to stockholders of record Mar. 17.

Boeing Airplane Co. declared a \$1 dividend payable Mar. 29 to stockholders of record Mar. 15. Last previous dividend, also \$1, was paid Apr. 7, 1963. Lockheed Aircraft Corp. delivered \$125,500,000 worth of airplanes in 1964 and returned to profitable operations, President Robert E. Goetz said. Year's profit had not been completed. Military deliveries in 1965 were valued at \$95,100,000, and commercial, \$12,400,000. Future sales are expected to be 95 per cent military. At year-end, Lockheed had \$14,500,000 worth of commercial business.

### FOREIGN

Vancouver International Airport control tower and communications building were destroyed by fire of undetermined origin. Loss was estimated at \$118,000, said United Air Lines' and Trans-Canada Air Lines' losses totaling \$18,000, and Canadian Pacific Airlines' loss put at \$10,000. Temporary tower staff meteorological building prevents operations to continue. New building, at more accessible location, is expected to cost \$500,000.

## INDUSTRY OBSERVER

►Sohi Aircraft Co., Sweden, feeling that its two-engine Scania is not competitive with any U. S. plane now in production and is the only true DC-3 successor now being manufactured, is trying to interest a U. S. transport plane manufacturer in acquiring the rights to produce the Scania under license.

►Chesley Vaughn's Canard (XTCU 1) is now being test flown at U. S. Air Force's Convair AFB, Ft. Worth. The wingless, low aspect ratio twin jet Navy fighter has already unofficially exceeded the world speed record of 679 mph. set by a USAF North American F-86A fighter.

►U. S. Air Force has not lost interest in the Northern Flying Wing design despite current cancellation of an order for 31 RF-4E jet-powered Wings. One of the 10 plans powered B-56 built by Northrop will be converted to jet power with two Northrop turbojets 33,000 lb. turbo-jet engines, and four General Electric J-47 turbojet engines rated at 5000 lb. static thrust each. Order B-56 will be converted to turbojet power. Airgraph's division of General Motors is building the propellers for the turbojets.

►Wright Aircraft Corp.'s T-38 turbojet engine, originally scheduled for installation on Boeing's B-52 long range bomber, will not be put into production by the Air Force. Engine has been flying in a Boeing B-17 experimental installation. Now is continuing development at the Allison T-40 and the Pratt & Whitney turbojet.

►U. S. Air Force is proving manufacturing some double fuel on weapons upgrading of the Boeing XB-35 project. Inside word is that USAF has quietly walked out the project after it began to believe results of recent research on extension of turbojet engines. XB-35 contract was awarded to Boeing design that located much like the original XB-47 with turbojet engines instead of the B-47's turbojet. Meanwhile USAF is pondering a switch to Boeing's XB-52 from turbojet to turbojet power.

►Air Materiel Command still prefers high octane gasoline as the best compromise for jet aircraft fuel. Kerosene with its higher flash is available in quantities needed and has dangerous explosive tendencies. And propane is still needed for repressuring engine planes anyhow.

►An eight lb. aluminum fuel firefighting tank has been tested at Wright Field versus two ft of a 1500 deg. F. propane fire. It is likely to be initial replacement for 35 lb. selector fire suits for aircraft crew.

►Replacement of crystals in VHF receivers by electro-magnetic devices is being studied by Air Materiel Command's Electronics division, to overcome a shortage of crystals expected in the World War II when the crystals were flown into U. S. from Russia.

►Contract for research and development in "the general field of nuclear reactor technology" has been awarded to North American Aviation, Inc., by the U. S. Atomic Energy Commission.

►Panair's new all-weather version of the HRP-3 transport helicopter being built for the Navy and Marines has also attracted interest from the Air Force. USAF is considering the HRP-3 for severe work since it has the capacity to evacuate an entire bomber crew from the nose of a crash.

►Cover reports that foreign and domestic airlines have now accepted 734 Conquest-Learjet. Latest order on domestic airlines from 734 on an order of 734, Panair, 22, Wainwright, 10, 824, 12, Continental, 5, Trans-Australia, 5, Swiss Air Lines, 4, CNAC of China, 1 on an order of 5, Iberia, 1 on order of 6, and Northeast Airlines, 1 on an order of 5.



UNHEALTHY APPROACH—Interceptors closing the B-36 seen into the bomber's heavy tail armament, shown here in normal view.

## Improved B-36 Is Planned by Strategists

**Big bomber in top spot on Air Force program after performance exceeds estimates.**

By Robert Hott

Top U.S. Air Force strategists are counting on the Convair B-36 bomber as the backbone of their nation's tactical strategic bomber force for at least another six years.

Developmental progress now under way is aimed at improving performance of the B-36 series to a peak of 500 mph true air speed at an altitude of 50,000 ft. Present performance of the B-36 with full equipment and 10,000 lb. bomb load is 472 mph true air speed at 45,000 ft.

Jet Pods—Next step will be the B-36D (Advanced Weir, Jan. 17), with four General Electric J-47 turbojet engines rated at 3,000 lb. static thrust added to the present power of six Pratt & Whit-

ney B-4500-41 piston engines rated at 3,500 hp. Addition of four jet engines posed as "pod" nacelles identical to those now used on the Boeing B-47 is expected to boost performance to 475 mph true air speed at 45,000 ft. Present type B-36D is in final stages of completion at Convair's Ft. Worth plant and is expected to make its first test flight in April.

Beyond the B-36D, progress is still in the planning stage, but top level development has included use of the Allison T-40, 5,500 hp. turbojet and super-turbo of the B-36 wing to permit operation at higher Mach numbers than the B-36 wingtips or less than two hours.

Production Plans—Production plans now call for Convair to build a total of 114 of the B-36 series at Ft. Worth.

Presidential certification of an additional 510 million in USAF government funds last week gave the green light on the final increments of the 19-49 plus modifications of all 134 planes to take the jet pods. Convair has now built 54 of its original order for 95 planes and is sweeping out complete bomber per work. Production plant modifications are expected to keep the Ft. Worth plant busy until the beginning of fiscal 1952.

An extensive modification program will include beefing up the wings of all planes to take jet pods, new type bomb bay doors, structural internal bracing, adding armament and 5,500 hp. turbojet engines to the 12 model A6 and equipping one group of B-36s for strategic reconnaissance.

Boost Gears—The jet pods are designed to fly on by themselves for the B-36 wingtips or less than two hours. They will not be used for all missions but are expected to boost the maximum takeoff gross to 115,000 lb. They will



BOMBS GROW—B-29 (foreground), the heavy bomber of World War II, is a motion bomber near the B-36 approach.

permit a larger fuel load on takeoff, a shorter takeoff run, faster climb to altitude and speed increase at bombing altitudes. Addition of fuel tanks will reduce range by less than 300 miles.

Present top spot of the B-36 in USAF plans is a sharp reversal from its previous position role as an alleged "wing duff" and overly "white elephant" that was held in such low regard that orders were once actually issued that never executed to cancel the entire project.

This recent shift has been due to two factors.

Actual performance record of the B-36 types which have now accumulated a total of more than 5,500 hours of actual flight time and have far exceeded original Convair performance plans.

Discovery of deficiencies of jet fighters at the 40,000 ft. bombing altitude of the B-36. A series of test assignments pitting the Lockheed F-80C, Republic F-54 and the North American F-56A against the B-36 has indicated that the jet fighters are unable to make significant percentage of successful attacks on the bomber and never have been able to make an interception until after the bomber reached its target and dropped its bomb load.

These B-36 vs. jet fighter tests conducted over Florida and California have resulted in a thorough review of USAF fighter plane requirements and have served the generally accepted position theory that jet fighter development had gone the definite a marked edge over piston engine boundaries.

New Area—Key to the present role of the B-36 is its performance at 40,000 ft. and above shifting the fighter bomber battle into the tropopause, an area that has never before been thoroughly explored.

At altitudes of 40,000 ft. and above, efficiency of present jet engines falls off much more rapidly than does efficiency of the turbocharged piston engines of the B-36. Jet fighters have only 80 to 100 mph speed advantage over the bomber. This margin has proved insufficient to make intercepting jet-to-jet games at an extremely slow rate of closure in the face of heavier defense armament.

Fighter Stalls—The low wing-loading of the B-36 makes it possible just to outmaneuver the fighters which lose higher wing loading. Fighter margin between top speed and stalling speed is extremely narrow at 40,000 ft. restricting them to shallow 35 deg. turns.

Rate of climb of present jet fighters types to 40,000 ft. is not fast enough to allow them to intercept the B-36 before it reaches its target and drops bombs. Early warning radar gives less than 10 minutes warning of a B-36 approach while fighters take 20 minutes usually 40,000 ft. Even on days when B-36 controls are clearly visible from the ground jet fighters have been unable to climb to 40,000 ft. in time to position themselves for an attack, before the bomber made its drop.

Performance Record—Performance of the B-36 to date includes:

Two 12-hour missions flown entirely at 40,000 ft. except for climb after takeoff and descent for landing.

An 8,000-mile mission from Ft. Worth to Hawaii dropping 33,000 lb. of bombs and returning with 1,800 gal. of gas.

A maximum bomb load of 45,000 lb. carried halfway on a 5,100-mile mission with bomb drops made from 35,000 ft. and 40,000 ft. and return at 30,000 ft. An 810-mile mission dropping 10,000 lb. of bombs at the halfway

mark and averaging ground speed of 323 mph, returning with a 5 percent fuel margin.

The original B-36 design was the work of Convair engineers headed by Ralph Bayless and Robert Weimer. It was submitted to the Air Force in August, 1941. Contract for 100 B-36s at a total cost of \$160,178,000, not including government furnished equipment, was approved in August, 1945. This contract was cut back to 95 planes only in 1947 with cancellation of the entire project ordered later. Only the actual flight performance of the first B-36s to roll off the Convair line in the fall of 1947 verified the construction and sustained the B-36 project.



B-36 TEAM—J. W. Lucas (left) and R. C. Schell were key men in development of bomber. Schell is now Convair chief engineer, with Lucas succeeding him as chief engineer of Ft. Worth division.

## Air-Mail Appropriation Approved by House

The House last week approved \$45,385,000 for foreign air mail and \$41,775,000 for domestic air mail service in the 1958 fiscal year. Post Office Department appropriation bill.

This compares with estimated appropriations of \$68,360,000 for foreign air mail and \$80,710,000 for domestic air mail for the current fiscal year. Second Assistant Postmaster General Paul Allen estimated that the coming-year allowances, based on extensions of last July, will fall far short, and supplemental funds will have to be requested later.

Other developments on air mail funds on Capitol Hill:

- An appropriation of \$17 million for foreign air mail payments for the current fiscal year was approved by the House as a deficiency bill, now pending before the Senate. The \$17 million plus \$615,491 the Department has available for reauthorization, would go to Pan American Airways (North Atlantic), \$2,562,776, American Overseas (North Atlantic), \$1,781,011, Transcontinental and Western Air (North Atlantic), \$7,470,568, Colonial Airlines (New York-Bermuda), \$162,127, Pan Am (New York Region Area), \$118,013, American Airlines (Port Worth-Mexico City), \$14,716, Eastern Airlines (Miami-New York), \$16,085, National Airlines (Miami-Hawaii), \$5913, foreign air carriers, \$39,860.

• As additional \$20,906,600 was requested from the Senate by the President for foreign air mail payments to the deficiency measure—\$13,446,000 for the 1949 fiscal year, \$2,562,000 for the 1948 fiscal year, \$2,562,000 for the 1947 fiscal year, and \$270,000 for the 1946 fiscal year. Of the total, \$20,929,715 is the amount CAR estimates will be required to meet any increase that will be granted through Sept. 30 of this year.

• A deficiency appropriation for Alaska as well as the new route service of \$718,000 for the 1948 fiscal year, \$250,000 for the 1947 fiscal year, and \$193,600 for the 1946 fiscal year, recommended by CAR rate increase awards, was also requested by the President.

## Academy—But Where?

President Truman's recommendation for the establishment of a National Air Academy has stepped up a fog-of-war in Congress on its location.

The issue has been postponed as the House on Air Academy at Randolph Field, Tex. (Sen. Conn), "The Southern Air Academy" at California, Sedalia, Mo., and Air Force Base, Okla., in the vicinity of Adams City, Kans., Hutchinson, Kans.



Mid-air refueling technique which made nonstop route possible largely hinges on...

## Globe Hop Sets B-50's New Role

Nonstop flight confirms claims that refueling puts all medium bombers in the intercontinental classification.

Now atop round the world flight of a Boeing B-50A bomber using aerial refueling techniques had strong military and political implications last week.

Air Secretary W. Stuart Symington confirmed Americans' view's earlier statement on Feb. 26 that the Boeing B-50 would become part of U. S. Air Force's intercontinental bomber force as a result of the successful application of aerial refueling to its operations.

Speaking in Ft. Worth just after the B-50A completed its 21,452 mile round the world nonstop flight, Symington said:

"This means that all our medium bombers (B-50 series) are now intercontinental bombers."

Political Support—Political spokesmen pointed to a strengthening of USAF's case on Capitol Hill. Key Congressional leaders indicated they were impressed with the B-50A performance as substantial proof of USAF's claims regarding its ability to conduct intercontinental bombing operations without the use of refueling bases.

The Boeing B-50A Lucky Lady II

completed its 21,452 mile flight in 94 hrs. 1 min., with four aerial refuelings (Ansonia, Wisc., Feb. 21) and a total fuel consumption in excess of 50,000 gal. Aerial refueling was made by modified Boeing B-29 tankers over the Azores, Dithmars, Arabia, Clark AFB, Philippines, and Hawaii.

• 229 Mils—Two tankers were assigned to refuel the B-50A with a third tanker standing by during each refueling. A fuel tank of B-29 tankers accompanied the Lucky Lady II on its final leg from Tacoma, Wash. to Ft. Worth but did not transfer fuel. Average ground speed for the entire trip was 239 mph.

Best indication of the significant military performance of the B-50A was given on the first two legs from Ft. Worth to Okla., WSA's initial 10,000 mile round the world nonstop flight and now refueling over the Azores, the B-50A flew 9189 statute miles and arrived over Dithmars with a fuel reserve good for 1 hr. 45 min. Subtraction 1600 gal. of fuel in jet the equivalent of 24,000 lb. fuel load would leave the B-50A with sufficient



...the specter for loss in fall of B-15

fuel to complete 10,000 miles carrying the 10,000 lb. bomb load full way. The Lucky Lady II arrived in Okla. with fuel tanks and in bomb load.

• Engines Fine—The four Pratt & Whitney Wasp Major engines functioned smoothly during the entire 94 hour trip. Weather was excellent with only four hours of instrument flying during the entire trip. SAC headquarters maintained tactical control of the plane with hourly communications averaging 45 minutes for transmission of messages between Lucky Lady II's flight leaders in Okla. and the Lucky Lady II in flight. Three of the four refueling contacts were made visually with the fourth made using an automatic radio beacon. Refueling techniques were those described in detail in Ansonia Week, Feb. 21.

The operation revealed that SAC now has B-29 tanker squadrons in operational service. The 13 tankers required for the round the world mission were in place at the Azores, Dithmars, Clark AFB, and Hawaii less than 10 days after the operational order for the mission was received at their Tacoma, Wash. base.

• 199 Ch. Order—USAF now has 199 B-50s on order. All will be equipped with refueling probes. Boeing's Seattle plant is now producing them at the rate of about a dozen per month. The B-50A has a design gross weight of 140,000

Log of Lucky Lady II (Boeing B-50A)						
	GST	Date	Miles	Elapsed Time	Average Speed	
Depart Fort Worth	13:21 am	Feb. 25				
Arr Ansonia	2:51 pm	Feb. 27	3184	15:34	210 mph	
Arr Dithmars	11:05 pm	Feb. 27	3195	15:39	210	
Arr Philippines	7:04 pm	Feb. 28	34,278	15:39	242	
Arr Hawaii	9:05 pm	Mar. 1	39,662	75:54	247	
Arr Fort Worth	9:21 am	Mar. 2	13,452	94:01	231	

lbs. wingspan of 141 ft., length of 92 ft. and is powered by four Pratt & Whitney R-4380 engines rated at 3000 hp. Top speed is about 355 mph.

B-50B features a bedded up wing B-50C is powered by a Pratt & Whitney V-12 powerplant with greatly superior performance to the A and B models. The bomber has been redeveloped as

the B-54A. The B-50D represents only slight modification over the B model with performance remaining about the same.

The B-50 series has a service ceiling of more than 38,000 ft. and a maximum bombload of 10,000 lb. Without refueling it can carry a 10,000 lb. bomb load over a 6000 mile range.

## Johnson: Friend of Air Power

Incoming defense chief known for past support of aviation industry.

Appointee of Louis A. Johnson, 38, of Cleveland, W. Va. as Secretary of National Defense to replace James V. Forrestal was generally hailed as an aviator since in many ways his life has been a study in the history of aviation. Johnson will take office May 31.

Johnson resigned last week as a director at Consolidated Vultures Aircraft Corp. His long flow of aviation experience represents such awards, all single line with headquarters in San Antonio, Tex.

• Wide Experience—The new defense secretary has had extensive experience both in military aviation and aviation. He served as Asst. Secretary of War during the second Roosevelt administration (1917-1940) and was eventually an aviator during that period in getting the expansion of the American aircraft industry to meet the needs of Great Britain and France in addition to those of the U. S. Army Air Corps.

Johnson also made many speeches during this period stressing the vital importance of expanded air power in the national defense structure and was often called as "a wingman" for his strong stand on military preparedness.

• Support Air Corps—During the past year Johnson also became involved in the controversy over the air cockpit vs. liquid cooled engine and was one of those responsible for development of American production of liquid cooled engines. He was also a leading



Louis A. Johnson

figure in the controversy over development of the Boeing B-17 Flying Fortress and supported the Air Corps position on the need for long range bombers against opposition by the Navy and Consolidated Vultures Aircraft in the War Department.

Johnson was also an outspoken advocate of industrial mobilization and began the first practical steps toward large-scale industrial participation in the defense program several years before Pearl Harbor. He was a leading figure in development of the American Legion's postwar air power program.

Johnson served as national commander of the American Legion, and was President Roosevelt's special envoy to India in 1942.



## More Powers Asked For Defense Secretary

President Truman last week asked Congress to increase the powers of the Secretary of Defense and tighten his control over the defense occupation.

The President's recommendations, partially arising out of the proposals of the Commission on Government Organization, headed by former President Herbert Hoover, were:

- That the present authority of the Secretaries of Army, Navy, and Air Force be applied to the President over the head of the Secretary of Defense be revised, and the three service Secretaries, "advisors," (that) departments under the authority, direction and control of the Secretary of Defense.

- The "National Military Establishment" be converted into an executive department known as the "Department of Defense," with the Army, Navy, and Air Force "designated as military departments" within the executive department.

- Secretary of Defense be provided with an Undersecretary of Defense and three assistant Secretaries. (The House Armed Services Committee has approved legislation creating an Undersecretary.)

- The Joint Chiefs of Staff be provided over by a "chairman," reporting to the Secretary of Defense and the President,

who would "take precedence over all other military personnel."

- The Secretary of Defense be the sole representative of the Department of Defense on the National Security Council, the nation's top policy group, assigned the function of coordinating domestic civilian and military, and foreign programs.

The three service secretaries are now members of the council. Others are the

President, chairman of the National Security Resources Board, and other department heads as designated by the President. (House Armed Services Committee has approved a bill making the Vice President a member of the council.)

- Control of the Secretary of Defense over the Members Board and the Research and Development Board be tightened.

## Odom Sets Lightplane Record

Second attempt in Bonanza at 5000-mile course from Honolulu to New York is completed in 36 hr., one min.

A frosty 25 mph wind blowing out of Hawaii made the difference between success and failure for Capt. Bill Odom as his second attempt to fly a Bonanza Bonanza around 5000 miles from Honolulu to New York.

The Bonanza, powered with a 185 hp Continental engine, had only 14 gal. of fuel left when it touched down at Tekeheon Air Terminal, where Odom was greeted by Walter H. Beck, president of the aircraft company bearing his name and a crowd of enthusiastic spectators.

Odom had started with 388 gal. of fuel, including the regular 40 gal. tank-

age and 245 gal. in special tanks and wing tanks.

His was reported weighing 1779 lb. nearly 100 lb. below the 1860 lb. maximum for the P-111 light plane category in which Odom was competing.

The achievement is expected to give Odom a class world record as the P-111 lightplane classification for runway flight. There was some unofficial challenge of the earlier record claimed to the same category for his Jan. 11 flight of 2466 miles from Honolulu to Oahu.

Challenges were based on two European seaplane lightplane flights.

On his earlier flight (America West, Jan. 24) Odom was forced back by wing condensation after he had climbed to 14,000 ft. over Maui, Nevada.

Odom avoided weather trouble on his second flight by winging southeast from Oahu to escape a storm over the Sierra Nevada mountains. His route across northern California and north on Oregon to Boise, Idaho at 8:24 p.m. Mar. 7 to Rock Spang, Wyo. at 11:35 p.m.; to Omaha, Neb. at 4:42 a.m. across Iowa and Illinois to Cleveland at 9:11 a.m. across Pennsylvania, departing New York at 11:55 a.m. and arriving at Tekeheon at 12:06 p.m. Mar. 8.

He had started from Honolulu at 12:05 a.m. Mar. 7.

Odom was a business man on the trip, and showed himself and changed plans as he passed over Cleveland in preparation for the welcoming ceremony at Tekeheon.

## Another Alraft

When the isolated coastal village of New Bay (extreme northwest corner of Washington state) was cut off from the outside by flood waters that washed out the only highway, Coast Guard P-111's took on the job of flying in supplies. They delivered more than 20,000 lb. of food, supplies, and equipment during a 10-day period.



## STUDY IN TRIANGLES

The vertical view of the Cessna 180, Model 700, is shown in this photograph. Symmetry of the wing's leading edge is clearly visible, as is the delay between the wing's leading edge and the fuselage's leading edge.

ability difficulties at low speed. The all-new Model 700, powered by an Allison P-111 turboprop engine, will be sold only for low-speed (140-150 mph) utility tests (Aviation Week, Mar. 7).

## PRODUCTION



## Apollo Turboprop Transport Nears Trials

Medium-range craft will carry 31 passengers and is Britain's first plane designed for new powerplant.

Britain's first commercial jet turboprop is nearing completion at the Avon Street Whitworth Country plant.

The Apollo will be powered by four Armstrong Siddeley Murex II turboprops, has a gross weight of 70,500 lb. and will accommodate 31 passengers at 7,500 ft. of height on its powered climb. It is designed to cruise at 185 mph at 20,000 ft.

Basic Specs—It is apparently designed to do the type of work now being done on U. S. airlines by the Caravelle and Murex II, both of which have a slower speed but carry 40 passengers.

Basic specifications of the Apollo 70 ft. length, 91 ft. wingspan, 850 sq. ft. wing area, maximum height 25 ft. It has a variable twist leading gear with double wheels on nose and main wheels. Performance includes: takeoff to clear a 50 ft. obstacle 2700 ft. with a maximum gross of 30,500 lb. and 2400 ft. with 37,000 lb. gross, all at range of 1,500 miles at 20,000 ft., 2100 ft. per minute rate of climb on four engines and 1500 ft. on three engines.

• Cabin Details — The console was monocoque fuselage but two forward baggage compartments, a main passenger cabin seating from 24 to 31 passengers in double seats on each side of a center aisle. Beyond the passenger cabin are two lavatories, a galley, a coat rack and a third freight compartment. Head-

room at 6 ft. 8 in. is offered down the center aisle. Thermal deicing system is provided for wings, and tail with electric heat on the propellers.

## Deliveries Near For Westland-Sikorsky

British version of the Sikorsky S-61 helicopter is coming off the assembly line at Westland Aircraft Ltd., with the Royal Navy and commercial interests dated to the delivery on the craft shortly.

Westland has built and flown four S-61s, and present production plans will keep the company busy on the project for many months. Under its contract with Sikorsky Aircraft division at Stratford, Conn., the British licensee has the right to market the Westland-Sikorsky S-61 in all parts of the world except the United States and Canada.

• Different Engines—Chief-Principal difference between the British and American version is the substitution of the 525 hp. Alouette II on cooled rotor shaft for the 600 hp. Pratt & Whitney Wasp Junior. The added horsepower is expected to boost performance slightly.

While the Westland-Sikorsky is very similar to the American original, it cannot pass the customary tests for its British certificate of airworthiness.

These tests for commercial usage are made complete, and the certificate should be issued by the end of March. British military helicopters need no certificate, so deliveries to the Royal Navy will start as soon as special equipment is received.

Both the Royal Navy and Post Office, Ltd., one of several commercial companies involved in the Westland-Sikorsky, have had extensive experience with Sikorsky-built S-55s. The helicopter unit of British European Airways also has used the U. S. craft.

## Packard Plant Closes

Reductions in Air Force appropriations for aircraft engine experimentation was cited as the reason for the recent closing of the Packard Motor Co. turbine engine development plant at Toledo, Ohio. The shut-down order was a surprise to all except top officials among 475 engineers and technicians.

There are no immediate plans for use of the 50,000 sq. ft. plant Arthur Webb, manager of the plant for Packard and former vice president of Caterpillar-Wright Corp., stated that the Air Force decision was made after a review of all research and development projects with an eye toward the necessity of maintaining a balanced program. Higher priority, he said, now given engine needed for new projects now being developed. Webb added that the Air Force was completely satisfied with progress of gas turbine development work done at the Toledo plant.



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and great Hoover Dam,  
wonders, all are assured

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which is calling upon Republic F-4D Thunderbolts  
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San Francisco, gateway to the Orient — and the San Joaquin's lush acres of nature's patterns

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which is calling upon Republic P-84 Thunderbolts in ever increasing numbers to  
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OLD DESIGN: Curtiss NC-4's hull contributed only small part of craft's total drag. Progressive general cleanup led to . . .

## Research Review

# New Hull Fineness Slashes Drag

Remarkable reduction in form resistance eliminates classic inequality, makes flying boat competitive with landplane.

By Robert McGovern

The age-old controversy between flying boat and landplane embryology has assumed new importance in both military and commercial demands increase for longer range and reduced operating costs.

The modern airplane has been pushed to such limits of efficiency that such formerly minor items as landing gear weight, tailfin area and wing weight and percentage now tend to grow weight are now predominantly design considerations.

It is against a new framework of actually high power and large cost (24,000 hp, 2,600 hp, Hughes flying boat, 21,000 hp, 150 ton Cessna D 55 land plane), that comparison between the flying boat and landplane based on previous data are no longer valid.

The "new, awkward" flying boat at present day has now been replaced by sleek, high performance designs that are comparable in the in-flight performance of landplanes, while retaining the classic advantage of undisturbed surface facilities.

Two Types for Tests—Research engineers have improved the aerodynamic and hydrodynamic efficiency of flying boats by designing hulls that are longer and slimmer than previous shapes. Length/beam ratio has become an important extension of the efficiency of a flying boat design.

Two new Navy flying boats feature that improved hull form. The Martin XP5M-1 is a sleekly flying and will serve as an important laboratory for hull design data for use on later (and larger) models.

The Curtiss XP5V-1 is a new racing competitor at San Diego, Calif., and is a full-fledged landplane type intended for long-range sea search and anti-submarine role within.

**Hull Drag Small**—Increasing the length/beam ratio (roughly comparable to the fineness ratio of a streamlined fuselage) as an aid to drag coefficient reduction is not new, and engineers have long known that improved flight performance could result from reduced hull frontal area in proportion to total hull volume.

However, it was not until the mid-Thirties that the reduction in total drag afforded through reduction in hull drag

helped to insure substantial experience. For example, the drag of the Curtiss NC-4 hull (designed by Heider G. Rahnman and Jerome Clark Man, later), which was a particularly "clean" design, was only an infinitesimal part of the total drag of wing, radiator, struts, wires, tail section, hull, etc.

**Both Cleaned Up**—In the U. S. Navy flying boat program to the aerodynamic drag of the Consolidated PB2V, the first land-based monoplane configuration of the Curtiss PB2V, and the full-scale blower design of the Boeing B14, Boeing XP380 and the Cessna PB2V, the flying boat form was "cleaned up" and the drag of the hull became a progressively larger portion of the total drag until it constituted as high as 25 percent in a modern design.

Thus, prior to the mid-Thirties, there was very little pertinent need for work on hull drag reduction, the major problem being the reduction of drag in the other components of the flying boat.

**First Toward Basic—Aerodynamic** factor that contributed to this situation was the lack of flying boat hull testing facilities in this country, although Germany, France and Great Britain possessed



NEW DESIGN: Curtiss XP5V-1 is sleek, slim configuration. Thus, lowering of total drag vs hull drag reduction becomes important.

model towing basins designed specifically for flying boat hull and complete boat research. A survey in 1929 by the National Advisory Committee for Aeronautics revealed that the U. S. had only two towing basins, both of which were designed for ship model test work, before the appearance of the seaplane.

It was on the basis of this situation that the NACA designed and built the first U. S. seaplane test basin. Construction began in 1933, it was completed the following year, and was dedicated on May 27, 1935.

It was this important research tool that first initiated the various design variables comprising a flying boat hull, and modern flying boat design owes much of its development to the late Sear Tinsley, who supervised the work in this basin for many years.

**Hull Drag Tested**—Within a period of about five years, work in this NACA high-speed towing basin had developed fundamental criteria for flying boat hull design on the basis of hydrodynamic characteristics, and it was only after this determination of required configuration that cruising design data could be developed.

After producing several flying boat hulls possessing required hydrodynamic characteristics had been completed, there were subjected to wind tunnel tests to determine their aerodynamic characteristics. The tests indicated that these hulls had about twice the drag of an equivalent wing form having the same frontal area.

**Drag Related**—These tests (1935)

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NACA researcher Bill Gurnea and Zerk, in an examination of available information on drag test hull design, discovered that parabolic hulls as reviewed the length of the hull while holding the beam constant, which, while actually producing an increased ratio, had completely obscured the effect because of the resulting decrease in the physical size of the hull.

The three stress, comparative data did not provide an indication of the effect of increasing the length/beam ratio with a given volume but merely compared a small hull with a given beam with a larger hull of the same beam.

• **Kelco Ingenuity**—Three models were developed with constant length/beam product but with length/beam ratios of 3.33, 4.54 and 7.04, covering the range of actual hulls then in use. To reduce length/beam ratio as much as possible, the models all used the same angle of dead rise, angle of forebody, angle of afterbody and (tail, transverse, the angle between them), height of hull and depth of step.

The hydrodynamic tests proved that increased length/beam ratio gave higher hull speed and lower hulling resistance, better hulling performance and higher permeable hull coefficients. (The tests also revealed slightly higher spray at high speeds but this has since been found in very many cases with length/beam product, which was constant in the tests reported here.)

Thus, for the first time, the endogenous importance of length/beam ratio was established.

• **Change Not New**—It was at about the same time that these important results were being obtained that one of the Hawaiian considerations of sound hull design was discovered. Fred Locke, noted airplane expert of the Stevens Institute of Technology (now with the Navy Bureau of Aeronautics) made an analysis of the dimensions, aspect ratio and loadings of about 100 flying boat hulls and reported that of the preceding 25 years had reported that designers had been steadily increasing hull length/beam ratio all along with increasing size.

By plotting hull coefficient against length/beam ratio for these hulls and boats, Locke uncovered the fact that the ratio had increased with the confidence in the relationship 4.55 times the cube root of the latter.

Actually, however, the gradual increase in length/beam ratio had been made to produce the hydrodynamic characteristics of the various designs a result rather than for aerodynamic reasons since a decrease in frontal area by a decrease in the beam results in an increased hulling loading, with attendant spray problems.

• **Clonaxion Obtained**—It was to determine a conclusion between hull dimensions and spray characteristics that NACA's John E. Perkins prepared a study that indicated that the latter were a function of beam loading and hull length/beam ratio.

The investigation developed the relationship

$$C_{LH} = 0.003 \left( \frac{L}{B} \right)^3$$

in which  $C_{LH}$ , the gross load coefficient, is equal to the gross load divided by 64 times the beam cubed,  $L$ , length of forebody (bow to step), and  $B$  is the maximum beam. The important criterion reveals that the load coefficient varies with the square of the forebody length/beam ratio.

• **Maximum Ratio**—Next step in the NACA research program was to determine just how far the length/beam ratio could be increased before adverse characteristics started to appear. A series of 10 hull models, varying in length/beam ratio from 5.87 to 10.5 were tested in the Langley towing tank and these tests indicated that there did exist maximum length/beam ratios for each given type of hull beyond which the load/resistance ratio began to decrease.

Thus, the range of useful length/beam ratios was effectively bracketed and the endogenous value now be concentrated within this range for more effective study.

• **Sea Range Tested**—As part of a general vertical investigation of the Boeing XP8B flying boat, NACA investigated an extreme series of systematic changes in hull form on a model of the plane.

With a length/beam ratio of 9.9, the model, which showed the following sequence of changes: increased beam and trim, and the range of stable c.g. position assumed unchanged. However, the tests showed that the range of stable trim was less than that obtained for models with conventional length/beam ratios.

• **Spray Problem**—Tests of the XP8B model were continued with the length/beam ratio changed to 9 to determine whether or not reduction of satisfactory spray characteristics was significantly in this particular configuration.

These tests confirmed the earlier results but again indicated a loss in the length/beam increases by rendering satisfactory spray characteristics at a possible coefficient above approximately 2.5.

However, an important conclusion of these tests was that the high length/beam ratio would cause a reduction in hull size without adverse effects on the spray characteristics.

• **Drag Reduction**—Having the desired satisfactory hydrodynamic characteristics of flying boats whose length/beam ratio is increased while holding

the product of beam and the square of the length constant, NACA now returned to the wind tunnel to determine the exact relationship in aerodynamic drag offered by the various hulls.

These wind tests proved conclusively that an increase in length/beam ratio from 4 to 15 reduced the resistance drag coefficient 25 percent. A fairly remarkable discovery and one establishing definitely the superior aerodynamic characteristics of high length/beam ratio hulls.

• **Tests Continued**—Flying tests have indicated between wind tunnel and the towing tank in further development and checking of these important results.

At a further check on the entire line of aerodynamic length/beam ratio, tests were conducted on a modified model of the XP8B 1 with a length/beam ratio of 15, an extremely long, narrow hull, yet even with this exceptionally high ratio the water resistance and induced drag coefficient of the model were approximately the same as for a conventional design with a ratio of 9.

The spray characteristics were as acceptable and the percentage of points of c.g.-trim available for raising.

A more detailed investigation of the spray characteristics of this model, with length/beam ratio varying from 5 to 15 indicated that designers now go to these high length/beam ratio without any fear of punishing spray characteristics. These latter tests actually indicated that higher loads may be used on the high length/beam ratio hulls than on conventional ratio hulls without danger of punishing spray, thereby indicating that the spray criterion of the equation as stated on this page, is actually conservative.

• **Change Permissible**—Additional tests of these models were made to determine the effect of such changes as depth of step, angle of afterbody line and length of afterbody on a model of length/beam ratio 9. It was indicated that not only does the high length/beam ratio hull permit greater aerodynamic advantage without imposed responsibility for hydrodynamic characteristics, but that the effect of variations in configuration is about the same on a hull with a ratio of 9 as on a hull with a ratio of 5.

• **Further Drag Reductions**—Having determined the basic advantage of higher length/beam ratio hulls, NACA concluded a series of tests to determine what further reductions in aerodynamic resistance could be made by angle "lean up" of the angles and corners of the hull form.

This was an approach to the problem directly opposite to the original, where a streamlined body of revolution was slowly added to produce a surface



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## New Fire-Killer Evaluated In Tests

More exacting requirements for fire extinguishing agents, imposed by larger, faster and more complex aircraft, have accelerated research and development in this field since the war's end.

It has become apparent that adequate fire protection employing carbon dioxide involves an undesirable weight penalty. Methyl bromide has long been recognized as an excellent extinguishing agent and permits considerable weight savings over comparable CO<sub>2</sub> installations—as much as 250 lb. or more in test systems on large planes.

Rensselaer Institute—Flowing, methyl bromide is highly toxic and corrosive. It was these characteristics that led Walter Kidde & Co., Belleville, N. J., to produce manufacturers of aircraft fire extinguishing systems, in conduct research on a fire killer that would match the efficiency of methyl bromide but not have that agent's toxicity and hence proper tests.

Data obtained in extensive tests, run on a surplus B-26 engine set up and as an engine accessory system mockup, indicate that is an immediate possibility for an improved fire extinguishing agent, the Chemron-developed C-8 seems the most likely choice. As now developed in this country, C-8 is perfectly pure monochlorodibromomethane.

New Agent's Properties—It has been found that C-8 has fire-killing power equal to that of methyl bromide when used in aircraft engine extinguishing systems.

Because C-8 has a higher specific gravity, approximately 12 to 13 percent more of this colorless than methyl bromide can be stored in a container of given volume.

C-8 has been found to be less corrosive than methyl bromide. It attacks all materials attacked by methyl bromide, but to a lesser degree. Presence of moisture accelerates corrosive action of both agents, and both require storing in clean, dry containers.

Toxicity studies were beyond the scope of Kidde's test facilities, but two most independent agents gave the conclusion that C-8 is considerably less toxic than methyl bromide, somewhat more toxic than carbon tetrachloride.

It has also been determined that C-8 can be used with the same Kidde equipment as now used on aircraft for methyl bromide.

Further research is being pushed in the hope that plane manufacturers and fire protection equipment makers can, with close cooperation, work out the practical problems still to be solved in the search for the ideal aircraft fire extinguishing agent.

One detail still requiring some work,

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When this new airplane designed exclusively for carrying freight enters service, it will open a new era in the logistics of military transport.

For example, the greater speed and payload of the new air freighter will enable it to do the work of two C-54s.

Large doors at each end of the DC-6A cabin afford maximum versatility in loading operations, since both loading and unloading can be performed

simultaneously. Also, the DC-6A incorporates a highly efficient cabin pressurizing and air conditioning system which permits full use of high altitude flight with no danger to perishable freight. Temperatures are held constant by thermostatic control whether plane is flying or on the ground.

Thus the outstanding performance of this new air freighter will make available to the military service a cargo transport capable of supplying worldwide bases and military operations of unprecedented scope.

As the new Douglas DC-6A takes to the air it will carry on the great record of the famed Douglas C-54, which completed more than 60,000 crossings of the Atlantic and Pacific during World War II and has made possible operation of the Berlin air lift.

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# PLANE FAX

A page of service tips for private flyers and fixed-base operators



## Haw Palo Alto Airport Eliminates Stuck Rings, Valves and Bearing Failures

J. P. Nyman, Superintendent of Maintenance of Palo Alto Airport, Inc., tells how "RPM" helps cut down expensive overhauls. He reports that "since the last fiscal year, after switching to RPM Aviation Oil, we have flown approximately 13,800 hours with absolutely no stuck valves, rings or bearing failures."

Now, of course, Palo Alto Airport uses RPM Aviation Oil exclusively in its company-owned flight line ships. And Mr. Nyman recommends "RPM" Oil to his customers because "it gives us a deep feeling of satisfaction to be able to use and recommend a product knowing that it will give the type of service to which the aviation public is entitled."



"We take better care of your plane"

## Haw parking care extends tire life

If a wheel of your plane, when parked, is directly below the engine, it's a good idea to cover it to keep engine drippings off the tire. Some careful flyers have inexpensive tire covers made for this purpose. Protect your tires from damage by oil—and use Adia Aircraft Tires for rugged, dependable service. For these reasons, too, have an extra "injury fence" and durability, thanks to special Adia engineering which produced the best for military planes. Your Standard Airport Dealer can supply you with Adia Aircraft Tires now.



least heavily on the overall fire extinguishing problem. This is improved cooperation of airports, to see how the extinguishing agent is applied to the hazard and away from passengers and crew.

## Tool Planning Brings Production Economies

Production costs at the Glen L. Martin Co. are minimized through advance tooling analysis by the company's master tool planning group.

When a new plane is to be produced, the master tool planner starts with the contract bid and injects his ideas into the engineers earliest thinking on the project. He maintains close contact with the engineering department throughout the various design stages to insure that the aircraft will be adaptable to economical construction.

In a report by John S. Mason, general supervisor of the master planning unit at Martin, it is pointed out that changes in production tooling not only are required to produce a new model aircraft, but also when a new contract calls for the same airplane at a different rate and quantity.

Mason emphasized that parts often can be produced more economically by hand although on the surface it would appear that the use of machine tools would be advisable. The number of parts to be produced usually determines which method is best.

As an example of economy achieved by proper tooling methods, Mason cited the case of a large recent loss in an early stage of design in a new car tract.

The planner recognized a difficult forming operation involved in producing a one-piece wing. He had the idea of forming it in one piece by hand, or in four pieces with simple tooling—let with an increase in assembly cost. Also, if in one piece the job could be done with expensive forming tools.

His analysis determined at what quantities each of these methods would become economical. A compromise resulted with the decision to use the expensive, hand-formed, manual on the experimental model, with a change to the first piece casting on the anticipated production contract. This quantity was not great enough to justify expensive forming tools.

Mason pointed out that economical production features are designed into an airplane, not through the piecemeal ideas of production tooling as applied in other industries, but on tooling assembly applied to the exact conditions peculiar to each new contract.



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## NEW AVIATION PRODUCTS

### Anti-Icing Glass

**Trans-Atlantic operators test effectiveness of current-heated windshield.**

Two international airlines, one American and one European, have been testing the newly developed *Neos* anti-icing windshield made by the Pittsburgh Plate Glass Co.

The panels are made up of two laminated sheets of glass sandwiching a layer of plastic to allow strength, with a clear coating of *Neos* material capable of conducting an electric current. It is in the two horizontal strips embedded in the ends of the windshield.

Resistance to the current is expressed across the panel areas it is least satisfactory to melt away any ice accretion on its outer surface.

Tests have been conducted during the past few months on scheduled operations over the North Atlantic. Aerial tests have delayed panels and a burned out voltage booster, the tests have been satisfactory. Frequently, extremely severe icing conditions have been encountered, but in all cases the wind shields were kept clear.

Trans-Atlantic airlines are experiencing problems in dealing with ice accumulation. But at least one domestic carrier has experienced difficulties usually involving glass and de-icing.

Several of the large airline manufacturers are currently conducting extensive tests of the *Neos* panel to determine whether it is the final answer to the vexing problem of windshield icing.—G.C.



### Jet, Missile Insulation

Thermoset insulation blanket for jet engines and guided missiles are developed by Johns-Manville, 22 E. 40th St.,

New York, 16, N. Y., is designed for application to jet turbines, exhaust cones, turbine nozzles, valves, pumps, nozzles or fuel lines in hot areas, where air heating or insulating system heat exchangers, and for protection of structure and fuel storage areas in guided missiles. Thicknesses begin at 4 in. and weight can be as low as 6.10 lb./sq. ft. Protection against fire hazard from absorption of fuel, insulating oil or hydraulic fluid is provided by fully sealing the blanket into a steel-welded, 600-in. tunnel in stainless steel tube. Inner hot side of blanket is ground to give flexibility and permit conforming to curved surfaces. Outer (cold) side is smooth, non-toxic surface of steel-welded sheet protected by fine mesh screen of *Mastel* metal against wear normally incurred during periodic inspection and maintenance procedures.



### Facilitates Electrical Checking

Portable tester, Model PA 505, made by Pacific Associates Corp., 2540 N. Hollywood Way, Burbank, Calif., is triple purpose unit serving for straight electrical trouble shooting, voltage tracing, and battery-duty battery charging. It may also be used as a power source for radio service and accessory test purposes. Power can be supplied to the plane through regular external power connections, or through generator supply connection at forward electrical coupling. Device is provided with rheostat voltage control giving adjustment of charging current for batteries. It can handle relatively large number of batteries, since it has continuous rating of 200 amp. at 28.5 v. d. c. Low overall height facilitates movement around bays and under airplanes. Optional model is equipped with gasoline engine instead of electric motor drive.



### Micro Hardness Tester

New tester conceived by Kent Cliff Laboratories, Potomac, New York, applies dual weight load as light as 1 gram with either Knoop or Vickers type indenter for more accurate checking of material properties. In operation, this device, besides room of steel, van, tool, ceramic, glass, and plastic. Device is bench type instrument, hand-operated to eliminate vibration. Adjustable dual weight for controlling speed of load application and rate of load increase, is adjusted easily to meet specific testing requirements. Mechanical stage, consisting of heavy plate, transfer plate and specimen block, provides convenient means for positively positioning exact area of test specimen beneath indenter and scope.



### Quick-Action Fasteners

The fast blind assembly of parts to metal panels, new expansion Speed Nuts are offered by Timmson Products, Inc., 2215 Fulton Rd., Cleveland 1, Ohio. Units are inserted into square or round holes and part is attached to panel in position and the screw driven. Nuts are self-retaining and expand when turning screw is inserted. Two basic designs are offered—with spring force forced to grip at root of screw threads, and with arms forced under to "ride" on thread crest.

This industrial helicopter has several major features: the main rotor has 10 blades, the tail rotor has 10 blades, the main rotor has 10 blades, the tail rotor has 10 blades, the main rotor has 10 blades, the tail rotor has 10 blades.



## "The newest thing in Helicopters"

... attains maximum strength and lightness with SHELBY Aircraft Tubing



Designers and builders of the Kaman H-400 helicopter have selected Shelby Aircraft Tubing for the main rotor hub and other critical components. The tube is made to order in 100% aluminum, 6061-T6, and is available in a complete range of sizes and in the most advanced grades.

The new Kaman H-400 helicopter, designed and built last year, is now in production for commercial use. This "definitely different" machine possesses in its use of dual, intermeshing rotors, and in the mounting of a rotors-mounted main hub in the rear fuselage which gives the most pronounced stability and maneuverability control response.

Designed to be used as a piece of industrial and agricultural equipment, the H-400 features dependability of operation, ruggedness of construction, and easy assembly for maintenance. These desirable properties are ensured largely by the use of Shelby Seamless Aircraft Tubing throughout—in the rotor shafts, landing gear, fuselage and controls. All tubing is SAE 3415 chrome molybdenum steel. Approximately 110 individual Shelby Tubes

are welded to form the basic fuselage structure.

It is because Shelby Seamless Tubing keeps weight to the very minimum and yet carries the weight in ruggedness and shock-absorbing systems that designers have for years used it in aircraft of every type and every size. With no other form of construction can you build so strong, so light, and so durable as with seamless steel tubing.

The uniformity and dimensional accuracy of Shelby Seamless Tubing—its ability to bend and shape to almost any form desired—its easy welding properties that permit complicated joints and sections with 100% efficiency, combine to help you achieve the utmost in structural efficiency. Our engineers and welders are now in applying U-B-S Seamless Tubing to your design.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

(Tubing Specialists Division)

BRIDGE CITY, TEXAS; SAN FRANCISCO; BOSTON; CHICAGO; NEW YORK

SEATTLE; PHOENIX; LOS ANGELES; SAN JOSE; SAN FRANCISCO



## SHELBY Seamless AIRCRAFT TUBING

UNITED STATES STEEL

## Dividends Bolster Aircraft Shares

Recent disbursement actions of Douglas and other key manufacturers seen as improving investment status.

Swynee action of Douglas Aircraft Co. recently in declaring a quarterly cash dividend resulted in an immediate favorable reaction to the company stock as well as improving the investment status of the industry as a whole.

The consistent and prompt dividend record of the aircraft builders often has been viewed by investors as a major indication of lack of stability in the industry. Current Douglas action tends to reinforce this confidence and may, in effect, cause other aircraft companies to follow the same course.

The aircraft industry, essentially a contracting business, does not have the regularity of operating income to most standard companies whose cash flows and profits can be measured almost uniformly throughout the year. For this reason, security manufacturers for the most part, when assessing its profitable levels, preferred to wait upon the completion of the year's results before taking any dividend action.

Moreover, the aircraft industry as a whole has had two major peaks and valleys in its history, the last of which was due to the industry's stockholders.

**►Tangible Monies—Many of the airline industry corporations deliberately pursue a course of making regular quarterly dividend payments as a means of good shareholder relations. One of the most noteworthy means of keeping the airline industry interests interested is to send them tangible monies in the form of the company's progress in aircraft activity.**

Stockholder relations in the aircraft industry have deteriorated with a well-publicized opening attempt last year as one example.

While there has been no evidence of any stockholder threat or evidence of emergency directed at the Douglas management, such disbursements to the company's most industry dividend payer are not met by such favorable regard for the company leadership.

**►Post Policy—From the time it acquired disbursement payments, Douglas previously followed the course of making such disbursements toward the close of its fiscal period and in an annual basis. The first payment was \$5 cents a share paid in 1912. Upon the receipt**

of dividends, \$3 per share was paid in 1918 with a similar amount disbursed the following year.

Beginning with 1940 and continuing through 1945, \$5 per share was paid annually. In 1946, after the declaration of what was expected to be the usual \$5 per share dividend, however, a deliberate amount of \$2.50 was paid a few months later. This was often where the 1947 payment was reduced to \$2.50 per share.

In the first quarter of 1948, the usual \$5 per share again was paid, leaving the impression that disbursements for that year were completed.

The current action of declaring a quarterly dividend of \$1.75 and a special of \$2.75 therefore represents a radical departure from past policies. The implication is quite clear that in the future, dividend payments will be on a regular quarterly basis.

**►Higher Payment—Moreover, the special \$2.75 payment lends credence to the belief that earnings for the fiscal year ended Nov. 30, 1948, were much larger than previously anticipated.**

When the 1948 dividend payment was declared, the management indicated that such disbursement would require earnings.

The current special dividend payment of \$2.75 indicates that net earnings for the past fiscal year amounted to at least \$4,500,000 or \$7.75 per share as the 100,000 shares previously outstanding. Reported earnings for the first six months of this year came to but \$3.25 per share, which implies that adjustments in the fourth quarter amounted to a material loss in final results.

Despite its active history dividend payments, Douglas continues in a healthy financial condition with a book value of about \$125 per share, net asset value alone being estimated to exceed the current market price of around \$60 per share.

**►Shareholder Payments—While aircraft companies pursue a policy of making annual disbursements, when such payments are possible.**

Cummins Aircraft has chosen a tendency to follow the twenty-year payment schedule, but generally in a semi-annual basis. Nevertheless, Cummins enjoys the best record in the aircraft

industry from the standpoint of consistency in earnings and dividend payments.

During the entire 35 years of its existence, Cummins has continued to pay in every year and has paid dividends in all annual periods. This is a unique record in the aircraft industry and would be noteworthy in any other industrial group as well.

Moreover, the record shows that since Cummins started its dividend rate, it has never been out. In June, 1948, the company declared a 100 percent stock dividend which increased total common shares outstanding to 1 million. Based on the new stock award, payments amounted to \$2 per share last year and, in 1947, \$1 for 1946 and \$5 cents annually for the preceding periods going back through 1941. Total earnings for 1948 amounted to \$2.70 per share.

With the company's backlog of orders at around \$150 million, there is reason to believe that earnings for 1949 will be at least \$10 million. The company recently paid a semi-annual dividend of one dollar per share for 1948, much earlier in the year than had been anticipated.

**►C-M-W—Recent changes, by management of C-M-W, might be expected to experience considerable asset stability in direction and policy. The company has had to contend with a difficult capital structure problem in relation to its current level of liquidity.**

An estimated net working capital in excess of \$300 million has made the company subject to various pressures for special disbursements in relation to its capital structure. In fact, in addition to the usual \$2 per share annual dividend to be paid on a quarterly basis on the 958,739 shares of Class "A" stock, a \$1 per share disbursement was declared for the \$12,015 shares of common now outstanding. A call has also been made for transfers in a limited number of common shares.

**►Stability Return—Recent contract awards and disbursements of orders have not detracted the immediate outlook for most of the separate aircraft build.**

On this premise, the supportive market generally should be in an improved position to gauge their immediate outlook. With this uncertainty removed, a major factor no longer exists as a reason to withhold or delay cash disbursements to stockholders when such assets are being accumulated.

The Douglas action in starting a quarterly dividend policy should set an excellent example in processing good will among stockholders for those in which book value has been made possible on a regular year-end basis.

—Seth Altschul

## Buenos Aires Letter

## U. S. Lines Strong in Argentina

Branch believed aiming at rich market now shared by PAA and Panagra as national lines languish.

**BUENOS AIRES—The air transport picture in Latin America continues to be a healthy one as far as the U. S. airlines are concerned. Both American and Panagra, as concerned firms of the foreign airline, however, are having their troubles.**

For American and Panagra, support generally good despite problems with the new "displacement" and "disorder" plans introduced in advanced in most cases. For American has also begun a "route" service to Buenos Aires from New York at 1200 service.

**►FAMA's N. Y. Service—The Argentine international airline, FAMA, which suffered heavy losses last year on its routes to Europe, has just come forward with plans for a New York service through its DC-6s as now in Buenos Aires ready to go.**

Generally speaking, the national lines of the South American region have had pretty rough going and several of them have had to curtail their services completely. This does not include such successful domestic lines as Zoolin, in Argentina, or Avianca, in Colombia.

The third U. S. airline to move into Latin America—Brazilian—has announced its plans to extend its route from Lima, Peru, across the Andes to La Paz, Bolivia, and thence across the Andes to Lima. It is also to be extended to Rio de Janeiro, the new terminal point. The route starts Brazil at spending \$250,000 on new mail and emergency landing facilities, having failed to make arrangements with Panagra for use of them.

**►Speed—Brazilian will be able to offer a very quick trip to Peru with its stop over the Andes and across the jungles of Brazil. La Paz, its midway point from Lima to Rio, is the highest capital city in the world with an elevation of some 15,000 ft.**

Brazil is believed to be still anxious of securing permission to fly into Buenos Aires, the natural terminal point in South America. If Brazilian hopes to break into the Latin American field in a big way, it will find it may only do so by giving a share of the hefty constant commercial business existing between the largest city of South America and the largest cities at North America.

An earlier one stage the means to the Argentine U. S. air agreement was

looking rather and frequency, it will be to be done. The original agreement was signed over two years ago. But until FAMA gets ready to fly regularly to Buenos Aires, Argentine probably can't be willing to discuss terms and its services.

When they do, the Brazil desires to fly into Buenos Aires will certainly be a number one topic for discussion. And Pan American will have any such success over the Argentine government as it is not to have had in other cases. Argentina is unlikely to give over power in leading out routes and to

secret to carriers of another country. **►Riding—Pan American and Panagra, together with the big passenger airway companies connecting the United States and Argentina, have had to place a strong limit in effect in Buenos Aires in regard to ticket sales. The new ruling is that no tickets will be sold to anyone who is not a resident of Argentina. That means that if a wandering Argentinean resident in Buenos Aires goes into the Pan American office and tries to buy a ticket to New York, he will be refused.**

**►Too Many Tons—Reason for the ruling is that Pan American and the others have apparently become caught up in an extremely large amount of Argentine pesos which, until recently, the Argentine government converted for them at the official rate. The government, however, is a desperate dollar shortage, an longer is providing such a currency exchange, so the airlines have had to try to force ticket sales in other currencies. It would be illegal for them to demand dollar payment in Argentina—they just get to be in people's hands in other currencies in other countries.**



## Python-Powered Lancaster

**LONDON—An experimental Lancaster aircraft fitted with two Armstrong Siddeley Python gas turbine propellers is the newest addition to the fleet of the Royal Aircraft Establishment.**

The Armstrong Siddeley Python is one of the world's largest gas turbine propeller engines and makes an interesting comparison with the 1950 hp Rolls-Royce Merlin engine also used.

Designed for aircraft cruising at altitudes of 30,000 ft and at speeds between 300 and 450 mph, the Python propeller turbine has a power output of 2500 b.h.p. at 1150 ft thrust, a total of 4110 ft-lb at 1000 ft and the world's most powerful engine-propeller.

**►Engine Modified—Much development work has taken place over the Python first run and passed its acceptance test early in 1949. The design of the Python is based on principles which have been**

common associated with Armstrong Siddeley gas turbines. The placing of the air intakes well back from the spinner of the contra-rotating propellers has made efficiently solved the problems of handling the large volumes of air which the engine consumes.

Further similar in nature or outline details from the leading edge of the wings are arranged, and data for the alternative configurations are as follows:

Armstrong Siddeley	
Max. disc over engine case	54 in.
Length mounting flange to center line of max. propeller	85 in.
Overall length	156 in.
Net dry weight	3120 lb.
Estimated installed weight (including propeller)	4100 lb.

## SALES & SERVICE



Newly styled 1949 Aeronca Sedan.



Lowest out four-place biplane

## Diversified Output Aids Aeronca

Non-aircraft items help lightplane builder weather market slump; military contracts total \$1.5 million.

By Alexander McHenry

MIDDLETOWN, Ohio—Aggressive work for diversified products to implement the current major demand for personal aircraft is paying off for Aeronca Aircraft Corp. As a result Aeronca has made long strides on the road to financial recovery.

The Middletown plant builder has been to enroll lightplane production at the end of World War II and was one of the two largest producers of such aircraft during the boom year of 1946.

Aeronca produced a peak production at one time of over 1000 planes a month, and built 7545 planes that year.

Big inventory—Rapid drop in light plane sales when followed, brought Aeronca with large inventories of tubing, fabric and other components, some of which are still being built up.

Aeronca's stock position worsened rapidly, as lightplane sales dropped to 1947 Aeronca sold 1218 planes, and in

1948 sales were further reduced to 399. Aeronca was not alone in the sales slumping, it was part of a general trend in which personal plane sales for all companies reached an all-time peak of 31,754 planes in 1946, and dropped sharply to 15,318 in 1947, and 7019 planes in 1948.

Plotted in 1947 of John Lander, former co-president of the Cessna-Wright Corp. Aeronca division at Buffalo, is president of Aeronca, one of the few times the company had reached a low point in its history and Lander radically changed policies and best the borders for new business to supplement the lightplane business.

As a new business—Only 28 sales in 1947 from Air centered command headquarters at Wright Field, Lander was in a strategic position to get Air Force business. When two Aeronca-Wright orders valued into at Middletown last year, Lander reported Aeronca had a total of approximately \$1.5 million in

military contracts on the books, and expected to get at least as much more over business this year.

"We're still an airplane company but we have a plan to keep full production, and in an airplane to stockholders to meet," Lander points out. "By getting these non-aircraft contracts we can keep our employees, reduce staff and plant as business until the lightplane picture improves."

In 1949 Lander-Aeronca's 1949 airplane line includes the four-place Aeronca Sedan with Continental C145 engine, the Aeronca Champion tandem trimmer, with 35 or 90 hp. Continental engines optional, and the side-by-side two-place Chief with 35 hp. Continental.

Bill Rumpsey, Aeronca assistant sales manager, noted that Aeronca, affiliate of Aviation Wings, and the latter, down from Dayton to Middletown in 1949 Aeronca Sedan, and then back to Dayton in a 1948 Sedan offering a change to compare the relatively few changes which have been made.

New interior fittings and upholstery have been installed into a quiet attractive plane. The Sedan's aluminum wing is painted this year, and the overall paint job is striking.

► \$500 Nose—Found at \$495 byway Middletown, the 1949 Sedan costs \$500 more than the 1948 four-place. Other four-place models, \$2495 for 90 hp version and \$2495 for 85 hp version, Chief, \$2495.

As of approximately May 1, Aeronca had a backlog of 63 five-seaters in the plans, including 43 Sedans. They are being produced at the rate of one a day with plans to step up the rate to three a day in April and four to five a day in May, at the expected demand rate.

With its present production line Aeronca estimates that it could build as many as eight planes a day.

► Sales Prospects—President Lander says Aeronca's 1949 Sedan, for one year he will be pleased. Aeronca is more optimistic, as might be expected from the sales department, and estimates sales of approximately 7000 units and about 1500 two-place 1948 Sedans sales totaled 190, just over half the total Aeronca sales. It is pointed out that the Sedan was late in getting into production last year and that the 1948 Sedan have never really been in.

As the lowest priced four-place Chief plane, the Sedan has a good potential in the lightplane market, since it has shown acceptable performance and is approximately \$1500 more than the Pioneer biplane, its nearest four-place competitor.

It is estimated that approximately 25 percent of Aeronca Sedan sales made in 1949 will be four-places.

► Firm Order Only—Lander has the airplane sales on a end-on-the-hand-

hand basis, building planes as firm orders and deposits come in.

The company now has 53 distributors, and approximately 1400 dealers. The number of distributors has been sharply cut, and Aeronca expects the distributors to drop off a considerable number of the less active dealers. Lander expects last year's sales with number of dealers, so in reduction that two-thirds of the dealers are now producers, and feels that a larger territory for each dealer might well lead to more in volume as dealer activity.

He has an immediate plan to change the Sedan entirely from its present form, except for minor changes, looking that a streamlined production on the existing model will result in production numbers that will be an advantage for the company and to be selected as the airplane.

Some of the major Aeronca competitor business. Chief for approximately \$750,000 for ground school courses with the Cessna. Export market, maintenance stands for Boeing B-50, amounting to approximately \$250,000, and smaller contracts for aircraft loading ships, a gas charger unit, and launch shuttles. The Middletown plant was trying hard for a new USAF contract for a ground power unit to start jet fighters, which would probably be the largest single chunk of government business it has obtained.

## New Committee

Appointment of a coordinating committee in agricultural use of aircraft for California is being managed by the California Aeronautics Committee. At request of service, manufacturing and agricultural groups interested in this development. Committee will include representatives of aircraft manufacturers, flight operations, farmers, aircraft manufacturers, etc.

## Arkansas Farm Planes

About 200 planes have been listed in Arkansas for farming, spraying and dusting crops, Geneville L. Moore, Arkansas coordinator of the Civil Aeronautics Administration, reports. They will be used actively in the farm crop in January, February and December.

Advantages of planes in dusting, as seen by Arkansas farmers, include ability to operate when the ground is too wet for rollers, and rapid coverage of crops, which often is urgent.

Most of the planes are converted Stearman trainers, but lighter planes will be used by some operators. One Texas operator is buying 23 planes while the state. These aircraft will be used for crop dusting.

## BRIEFING FOR DEALERS & DISTRIBUTORS

► AIRCRAFT JUNIOR GRADE—Washington State Aeronautics Assn. has planned a lightplane exhibit for relief work in case of a depletion of last year's stockpiles. Columbia River floods. Snow in the mountains in northern states last year, and a sudden thaw could precipitate a flood even worse than last year, it is expected.

More than 300 planes, two-place and four-place, owned by the flood plane operators are expected to be on call. Lists of available planes and plans, including ambulance planes, are compiled, and communities which could be notified by floods have been asked to pick out for high ground emergency landing.

Lighplanes have hundreds of beams of rescue and supply missions in the 1948 flood, mostly concentrated. The 1949 preparations are expected to make possible much greater efficiency if needed.

► INDUSTRY BENCH TWINS—Bench Aircraft Corp. has made available to its dealers an analysis of four existing popular lightplane models showing some 45 different types of business cases ranging from no-entire companies to wholesalers at food and dry goods. Biggest concentration of the two Bench planes is found in the petroleum industry, which owns 104 of the respective business, against some 90 firms.

Other major business sectors contracting and contracting companies, 49 firms using 26 planes; dry goods and grocery companies, 13 firms using 23 planes; individuals, 12 utilizing 12 planes; lumber and building supplies, 12 firms using 13 planes; machinery manufacturers, 11 firms using 12 planes; machinery parts manufacturers, 10 firms using 10 planes; printing and textiles, 9 firms using 10 planes; publishing companies, 7 firms and 7 planes.

► CROP SPRAYING REGULATION—George Childress, CAA industrial operations chief, had a recent conference on aerial application spraying at Kansas State College, Manhattan, Kan., that national regulation of crop-spraying activities from an aviation standpoint was not in practical or control over the ground and aerial applications by state departments of agriculture, together with an educational program teaching proper use of application.

Any national regulation would run into the problem of widely varying technical requirements, Childress said. He wanted about light regulations during the operation for limited efforts at spraying in adjacent areas, and pointed out that politicians have already been entered against operators for such dangers.

► RENOVATION STATION WAGON—Moving in on the safety plane market is the relatively unknown station wagon version of the Bench Bonanza, which has many popular models, great versatility in design, cargo facilities, storage and cargo space, great luggage on the passenger door which opens forward flat against the fenders, and special additional luggage arrangement.

Station wagon version is designed to carry two persons and 440 lb. of cargo, at one price and 355 lb. cargo with a range of 750 mi., or can be used as a regular four-place.

► MONTANA TO MICROBANE—Col. Lester J. Mithell has resigned his post as Wisconsin aeronautics director to accept a similar post in Michigan. Mithell takes the spot vacated last fall by resignation of Carl E. Evans.

Sen. Ernest L. McMillen, Gen. Hugh, chairman of the aeronautics commission has been doubling as Wisconsin director. Mithell's decision to leave Wisconsin was probably influenced by the failure of the state government to support him in his proposed airport development program. He had asked for a \$5 million two-year state airport program in match federal funds, but this was cut to \$1 million fund of \$500,000 by the governor, shortly before Mithell's resignation.

Mithell is probably best known for his part in the Mid of Paradise 1927 flight to Honolulu from San Francisco, in company with another Air Corps lieutenant, Albert Hegenberger, now a CAA's chief counsel who he flew the plane.

—ALEXANDER McHENRY

## PAA Studying Super Skycoaches

Juan Trippe discloses plans for world-wide tourist class service at Stratocruiser christening in Washington.

Pan American Airways President Juan Trippe is counting on his fleet of 20 new double-deck Boeing Stratocruisers to spend the day when world-wide tourist-class air transportation can be offered at least one third, or more below regular rates.

Speaking at Washington at the christening of the first Stratocruiser delivered to PAA, Trippe declared that it is not only an obligation but a matter of "good business" for international service to provide more air travel. He said the Stratocruiser will increase the cost aspects of Pan American's over-sea fleet by 40 percent, and then, in the first test, sufficient equipment will be available to provide low cost tourist class service to Europe, the Orient and Asia.

**Foreign Personnel Necessary**—There is no reason why a tourist-class trip to Europe that fall should cost

more than \$225 (\$495 roundtrip), according to the PAA president. "That is our objective, and we will achieve it if the foreign governments concerned permit. We are very hopeful that they will give us permission."

Current first-class New York-London rate is \$430 roundtrip, although a special 18-day excursion fare of \$460.70 has been in effect this winter to promote off-peak travel.

Trippe did not state specifically that PAA's \$3.5 million Stratocruiser, which now accommodates 75 passengers, would be used as super skycoaches. But company officials have said that the current's revised and larger capacity is being considered for this type operation.

**Skymaster Becomes Cited-Since last September**, Pan American has been receiving 10 passenger DC-4s equipped between New York and Puerto Rico.

And last month the carrier inaugurated direct air service from New York to Rio de Janeiro and Buenos Aires with 52-passenger DC-4s.

PAA's passenger traffic between Puerto Rico and New York has tripled since introduction of the second operations. "The people want better class air service, and it is here to stay," Trippe emphasized.

**Selling Arrangement Variable**—Kenneth G. Croon, Boeing chief sales engineer, states that the 71 new Stratocruiser can be used strictly as an economy-taxed medium by removing all berber seats. Trippe claims he is placed along one side of the aisle where double seats are now installed. "That is the same plane that will handle the cargo truck in berber and non-berber seats can be converted readily to a stretch carrying up to 114 passengers at maximum loads," Croon declared.

An "overcast" type of high-density Stratocruiser loading is already used by the Military Air Transport Service. The YC-70B employs double seats and alternative triple seats to accommodate 85 passengers.

**IATA Study Made**—A committee of the International Air Transport Association has been studying the whole tourist class fare picture and will make recommendations in 1960. The group was formed after a number of international carriers expressed support for coach service at IATA's annual conference in Bermuda last fall. (Aviation Week, Dec. 6). Earlier data IATA appeared to favor could become effective in Oct. 1.

PAA's first Stratocruiser flew from San Francisco to Washington for the christening ceremony on Feb. 22, and at an average speed of 155 mph. Shortly afterwards, a second Pan American Stratocruiser made the trip in 6 h. 12 min.

**Heavy Service Soon**—Target date for completion of supply West Coast Honolulu Stratocruiser service has been set for Apr. 1, according to PAA officials. A proving run on the Hawaii route was made only this month.

## NAL Offices Stock To PAA and Grace

In a series of surprise attacks, National Airlines has moved to strengthen its financial and operating positions.

The initial financial move was to sell W. R. Grace & Co., 174,360 shares of National stock for \$5.20 per share, up from \$4.50 per share. A few days later, on the course of the current Civil Aeronautics Board probe on the company's state of affairs, it was reported that 140,000 shares each have been offered for sale to W. R. Grace &

Co. and to Pan American Airways. It is presumed that the initial 174,360 shares acquired by the Grace interests were included in the allocation of 146,000 shares, the balance of 172,000 probably remaining under option. No conclusive details have been revealed as to what of acquisition and sale to be paid by Pan American.

**Capitalization Increase**—National Airlines now has but one million shares of \$1 par value stock authorized, and 218,537 shares actually issued. President G. T. Baker was last reported in owning about 168,000 shares of the outstanding stock. It is evident that the increase at the total 692,000 shares of stock contemplated will mean an increase in the authorized capitalization. The sale and issuance of the initial 174,000 shares to Grace, however, was less by so limitation of the authorized capital structure.

It is obvious that the combined 692,000 shares to be owned by Grace and Pan American interests would amount to about 46 percent of the revised capital stock as compared with only less than 12 percent if it should be held by Baker.

**Handle-Important**—Baker's reaction before the proposed stock purchase can be implemented. A primary consideration will be a determination to be made by CAB whether effective control rests in the hands of the new interests. Another question is the possible conflict, if any, that may exist between W. R. Grace & Co. and Pan American jointly own Pan American-East Airway.

In recent years, there has been a divergence of views on Panama by its two owners. Grace has equated a direct entry through the Miami gateway for Panama with the investment obligation. Pan American's compromise on this issue was resolved by an apparent exchange agreement between Panama and Pan American Airways.

Should the present capital shifts into National be approved, that current financial will serve as important transactions. Based on the indicated book value, almost \$4 million in new funds would be received by National.

**Competitive Effect**—If greater competition, National would require partial assistance in traffic diverted over its lines from its new subsidiaries at the New York and Miami gateways. This could place it in an improved competitive position in relation to Eastern Air Lines.

Completely unrelated to the financial move, was the separate agreement with National and Eastern Airlines, the Board. Under this proposal, the two airlines would operate under a through equipment arrangement under National's lease east of New Orleans and over Eastern's route west of that point.



Canadian Pacific Air Lines is rapidly completing plans for extension of over 13,000 miles of new routes to Japan, China, New Zealand and Australia, shown above.

involvement of new routes to Japan, China, New Zealand and Australia, shown above.

## Canada: CPA Pushes Westward

Canada's transportation giant, Canadian Pacific Railways, is launching its far-flung expansion program to enter the international aviation market by acquiring more than 15,000 miles of strategic air routes in the Pacific Ocean area.

Early this spring, Canadian Pacific Air Lines, subsidiary of the sprawling Canadian Pacific Railways empire, expects to begin trans-Pacific flights over its link to the Orient. In essence, CPA wants to have both of its Pacific routes in operation, one extending 6,555 miles from Vancouver to Tokyo, Shanghai and Hong Kong, via the Alouette Islands; the second running 3,600 miles from Vancouver to Sydney, Australia and Auckland, New Zealand, via San Francisco, Honolulu, Canton Island and Fiji.

**Railway Operations**—Canadian Pacific Railway, parent company of CPA, describes itself as "the world's greatest travel system." It not only operates a transcontinental railroad, seven major Atlantic and Pacific routes and plans the world's longest jet class of routes in Canada and trans-Pacific telegraph and news facilities.

Canadian Pacific Air Lines does not operate transcontinental. But its links extend from the U.S. border to the body coasts to north of the Arctic Circle.

For its transatlantic flights, on the trans-Pacific routes, CPA is leasing two

Consider "North Star" service from the Royal Canadian Air Force. The airline expects to take delivery late this spring on first purchased Canadian Fares ordered from Corsair, Lufthansa, Montreal. These planes will carry 31 passengers and will be powered with four Rolls-Royce Merlin engines.

**Government Policy**—Expansion of CPA into the international air transport field is the result of a change in Canadian government policy. During the war, the Canadian government announced a "closed airframe" policy



CPA President Grant McCaskey



60,000 TON SHIPS IN ONE LUMP

Perhaps not a record shipment, but large enough to fill out a full-sized overhead crane was this 60,000-ton ship redelivery, recently loaded aboard a Redwood & Western Archer DC-4 at New York International Airport. The largest ship delivered yet down New York International the

redelivery was carried 12,000 miles to Singapore for installation in a double oil tanker. The tanker operator calculated that he was losing from \$3400 to \$1000 a day while the ship was idle, and that an investment of the redelivery saved him \$117,000 to \$118,000.













## The Air Force Secretary

With the appointment of a new Secretary of National Defense, the No. 1 question in the aircraft industry is: Will Secretary Symington remain?

Those in those in Washington, "in high circles," who will tell you yes, and in many more in no. But we hope Stuart Symington is permitted to carry on with his job as our first Secretary of the Air Force. So far, on the evidence we have seen, he has turned in a remarkable performance of organization and building an Air Force on the basis made possible by the separate Air Force legislation. And his relations with the public and Congress have been outstanding. He is highly thought of on Capitol Hill.

Mr. Walter Lippmann, the eminent columnist, put it very well last week when he wrote that Mr. Symington, during the period when he continued to urge a 70-Group Air Force last year, against Ford's declared policy, "was clear, forceful, and unswerving by design."

Aerona would men who are clear-headed, and unswerving by design, and so far we like Mr. Lippmann, think Mr. Symington is one of these men.

## Better Lightplane Merchandising

The light airplane industry doesn't know much about John Lavelle yet, but he will be hearing more about him.

Aerona Aircraft Corp.'s president came from Curtiss-Wright, where he was controller for the Airplane Division. He has a rather laid-back attitude toward profit and loss.

Lavelle is naturally optimistic about the future of the lightplane business. He is already producing excellent aircraft and he intends to improve them steadily with the development of the art.

But he is not so involved with the romance of aviation that he will risk the life of his company by turning down non-aircraft manufacturing business. Actually, he has been in company's air salesmen. He has already shown the Air Force that Aerona can manufacture such needed items as ground maintenance stands for four-engine aircraft, and high priority combat equipment like rocket launching devices for barocods. Already, in Mr. Lavelle's short span as president, Aerona has completed, or has on the books, military contracts totaling \$15 million and at least as much more is expected this year.

Primarily because of the success of Aerona's non-aircraft contract history, and its prospects for more, the Reconstruction Finance Corp. is seriously considering the company's loan application.

Lavelle admitted to us last week, as we visited with him and other company executives at Middletown, Ohio, that he has heard criticism from some other aircraft

industry executives because he has launched an aggressive non-aircraft manufacturing program.

Lavelle believes his first obligation is to his stockholders. That means keeping his company and its present interest. If he can do that, even strengthening the company in the process, he feels he is maintaining this greater lightplane firm in a healthy condition until the private aviation business improves. This is itself a service to the lightplane industry.

Some of his ideas on the aircraft business are progressive.

Today's models are out. He will make steady improvements in production techniques but he feels that in the present state of general aircraft sales, "new" models are usually not new models at all, and their advertising is such that sales of current models is much as it appears sales of new ones.

Like several other plane makers, Lavelle will refuse to build any plane that is not sold before it starts down the assembly line.

Lavelle believes there is something radically wrong in the lightplane merchandising and selling business. He estimates currently that Aerona has about 33 distributors and 1400 dealers. In 1948 Aerona delivered a grand total of 599 planes. That is about a third of a plane per dealer per year. Piper Aircraft Corp. has about 1900 dealers, and sold a total of 1479 planes last year.

What kind of a dealer is it who cannot average out plane a year, Mr. Lavelle asks? Why is an aircraft manufacturer justified in running up any kind of expenses on such a dealer?

Furthermore, the dealer word is even blakier than indicated above because many of those 1900 "sales" were not sales to the public at all. The dealers bought hundreds of those ships for their own fleet base use.

So Lavelle is about to put Aerona's distributor system through the wringer to shrink it down to a size comparable to today's sales. He expects the distribution to bring the water out of their dealer system. The result should be a smaller, more efficient sales organization. Each distributor or dealer will have a large enough territory to give impetus to real selling.

Lavelle realizes that part of the problem is a duplication of dealers. Many operators have several dealerships, or firms which are at least partially competitive. But competition in their area is weak, little sales effort is expended because no matter which lightplane that occasional customer buys, the dealer will be out in Aerona's hopes to raise the temperature of the typical aircraft dealer a little.

"The world owes me a living" has been heard for so long in personal aviation that Aerona's audacious thinking and energetic drive for new business is a refreshing contrast.

ROBERT H. WOOD



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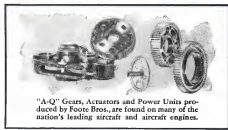
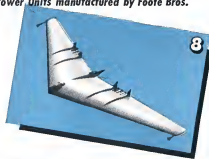
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